Title:
Faculty Perceptions of a Tobacco Cessation Train-the-Trainer Workshop and Experiences with Implementation: A Qualitative Follow-Up Study

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Declaration of interest: none

Acknowledgments: Kate Rodenbach assisted with locating the train-the-trainer participants, and Dr. Alan Zillich provided input on the interview guide. Dr. Joan Haase provided meaningful guidance on the study methods. This study was funded in part by the Purdue University Faculty Scholars Award and NCI grant R25 CA 174665 to K Hudmon. The Rx for Change train-the-trainer workshops (in 2003–2005) were supported by NCI grant R25 CA 90720 to K Hudmon. Grant number K08 HS022119 from the Agency for Healthcare Research and Quality supported a portion of Dr. Snyder's salary. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.

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ABSTRACT

Background: Between 2003–2005, pharmacy faculty members (n=191) participated in a national train-the-trainer workshop designed to equip faculty with the necessary knowledge and skills to implement a shared curriculum, *Rx for Change: Clinician-Assisted Tobacco Cessation*, at pharmacy schools across the United States.

Objective: To conduct a long-term, qualitative follow-up study of faculty participants to describe (a) perceptions of the train-the-trainer workshop, and (b) subsequent experiences with curricular implementation. Results of this investigation will inform a national survey of all train-the-trainer participants.

Methods: Participants were selected via random sampling from the group of 191 faculty members who participated in the workshop. Semi-structured telephone interviews with participants were audio-recorded and transcribed, and qualitative thematic analysis was conducted.

Results: Eighteen (62%) of 29 invited individuals participated in the interviews. All participants reported implementing components of *Rx for Change* at their institution. The analysis yielded eight major themes pertaining to faculty perceptions and experiences with implementation: (1) accessibility to tools for teaching, (2) increased confidence and skills, (3) flexibility delivering the curriculum, (4) factors facilitating implementation and challenges encountered by faculty, (5) enhancement in treating tobacco users in clinical practice, (6) students' confidence and cognizance of the pharmacists' role as a public health advocate, (7) networking and career development opportunities, and (8) useful background for research.

Conclusion: Participation in the train-the-trainer workshop increased self-reported confidence for teaching tobacco cessation, and faculty valued access to useful, updated tools for teaching. Furthermore, their newly acquired counseling skills were deemed helpful for treating patients' tobacco use and dependence in clinical practice. Participants also perceived improved pharmacy students' confidence and beneficial networking opportunities. Results can help future trainers understand faculty

experiences with implementing a shared, national curriculum and inform faculty participants of some of the potential long-term outcomes as a result of participation.

Key words: smoking cessation, curriculum implementation, qualitative research, pharmacy education, faculty training, faculty development

INTRODUCTION

An estimated 37.8 million American adults are tobacco users,[1] of which 16 million suffer from one or more tobacco-related diseases.[2] Because health professionals, including pharmacists, have been shown to be effective in delivering tobacco cessation interventions,[3-6] faculty members teaching tobacco-related content must be knowledgeable in providing cessation counseling for patients and should have the ability to integrate the content into the PharmD curriculum.[7] In medical education, one study found that a health promotion curriculum, in which tobacco cessation was one of several topics, was challenging to implement.[8] Barriers included preparing and supporting educators, the need for applying classroom activities in a clinical setting, and time constraints due to competing priorities within an already overloaded healthcare professional curriculum.[8] To address the need for tobacco cessation training in pharmacy schools, the pharmacy profession has systematically attempted to advance pharmacists' ability to assist patients with quitting through the development of the shared *Rx for Change: Clinician-Assisted Tobacco Cessation* curriculum.[9-12] Developed in 1999, the *Rx for Change* curricular materials were pilot tested extensively in California pharmacy schools[12] prior to nationwide dissemination. Through funding from the National Cancer Institute, two faculty members from each school of pharmacy were invited to participate in one of five 3-day train-the-trainer workshops conducted in 2003 (3 workshops), 2004 (1 workshop), and 2005 (1 workshop). A total of 191 faculty, representing 89 of the 91 pharmacy schools existing at that time (98%), participated in training.[13] Workshops were highly rated by those participants, and in a post-training survey, 68.3% indicated that they intended to implement the *Rx for Change* teaching materials into their institutions' curriculum in the upcoming academic year.[13] In a nationwide survey conducted by the American Association of Colleges of Pharmacy in 2016, an estimated 73.5% of the current 135 schools were utilizing all or parts of the *Rx for Change* program to teach tobacco cessation to their students.[14] These data provided evidence of long-term sustainability of the curricular content in schools as well as growth in utilization over time. However, these quantitative findings fall short in explaining the experiences of the faculty instructors and the long-term impact of their participation in this national initiative. Specifically, in an

effort to obtain guidance for developing new, shared curricular materials for other content areas of public health pharmacy, our goal was to gain an in-depth understanding of curricular implementation experiences as well as faculty perceptions of their participation.

In evaluating a program's sustainability, it is important to characterize the nature of change that occurs, reasons for the change, the process of implementation, and the long-term impact of implementation efforts.[15] To our knowledge, this type of long-term investigation has not been conducted previously for any educational program within health professional curricula. As such, the purpose of this study was to characterize faculty experiences with the *Rx for Change* curriculum and tobacco cessation in general by soliciting perspectives of faculty members 12 to 14 years after they attended an *Rx for Change* train-the-trainer workshop. More broadly, the study aimed to inform educators and training developers of experiences and possible outcomes associated with national train-the-trainer programs.

METHODS

Design and Rationale

This study is the first phase of a two-phase mixed methods, sequential exploratory research project. Qualitative research methods, which have become increasingly important modes of inquiry for applied fields such as education and health sciences,[16] are commonly used when little is known about a phenomenon or when the phenomenon to be understood is not quantifiable.[17] Given the lack of published literature surrounding shared curricula in academics, a qualitative assessment approach was selected to foster a deeper understanding of the constructs of interest.

Conceptual Framework and Interview Guide Development

The guiding framework for the study, including the development of the interview guide, was Kirkpatrick's four levels for effective evaluation of training programs: reaction, learning, behavior, and results.[18] Before launching the study, an interview script was drafted consisting of open-ended items, follow-up items, and probes.[19] To refine the first author's skills for conducting semi-structured interviews and ensure clarity of questions while optimizing the flow of interviews, a pilot interview was conducted with one of the train-the-trainer attendees. The pilot interview resulted in minor changes to the structure of several questions (e.g., ensured open-ended items, interviewer refraining from making

assumptions). This interview was not included in the analysis. Interview guide items are listed in the Appendix.

Recruitment and Sampling

Faculty members were randomly selected from the group of 191 pharmacy faculty who participated in the *Rx for Change* train-the-trainer workshop in summers of 2003, 2004, or 2005 **(Figure 1)**. Selections were made in groups (with fewer numbers each time as we neared completion) until data resulted in adequate descriptions of all themes, resulting in 48 random selections. One of the faculty interviewees recommended that we interview another faculty member, whom he thought would provide rich data for the study. We therefore invited the recommended faculty member, who then participated in the study. This sampling approach was applied to reach "typical cases,"[19] i.e., those with varying experiences with *Rx for Change* implementation, as would be expected in this type of training program. Internet searches were conducted to determine current email addresses and current locations of faculty members' employment, from which 29 potential participants were located. Faculty members were invited via e-mail to participate in a 30- to 45-minute telephone interview. The e-mail described the purpose of the study; interested individuals completed a web-based consent form and selected their preferred interview slot using a web-based scheduling application.[20]

Data Collection

Semi-structured interviews, conducted by telephone between June and October 2017, were audio-recorded and transcribed, and resulting transcripts were reviewed for accuracy. One investigator (NE) conducted all interviews. To aid with interview flow, brief field notes were taken during interviews. During the interview, participants were told when the recording started and also were informed that they could ask to stop the recording at any time. Faculty members who completed a telephone interview received a $30 Amazon gift card. Data were kept confidential, and transcripts were de-identified prior to analysis. Member checking was not conducted. Approval to conduct the study was obtained from the Purdue University Human Research Protection Program.

Data Analysis

Two investigators (NE, MC) conducted the qualitative thematic analysis. The two analysts coded the transcripts and identified themes and subthemes independently then met to compare, discuss, and

reach consensus.[21] Data analyses focused on describing, explaining, and understanding faculty participants' perceptions and experiences with implementing the *Rx for Change* shared curriculum. Analysts applied methods adapted from Green et al., where inductive data analysis steps were applied iteratively, including data immersion, coding, identifying themes, and subthemes.[22] Data immersion was achieved by reading and re-reading transcripts and listening to the recorded interviews. During coding, statements were labeled through line-by-line examination of the data segments, ranging from single words to whole paragraphs, to provide an understanding of concepts in the context of the interview. Double coding was permitted when a segment clearly fit within two different codes.[23] Data under each code were examined for potential emerging themes, an iterative process that started when ideas began repeating.[24] When data under one theme seemed to belong to two or more specific ideas, subthemes were created. MAXQDA software (version 11, VERBI GmbH, Berlin, Germany) was used as a data management tool.[25] The first two transcripts informed development of the initial codebook, which included created codes, their definitions and meanings, and an example quotation for each. Data analysis of the transcribed interviews occurred concurrently with data collection.

To enhance credibility of data analysis, several strategies were applied. Specifically, all analytic decisions were documented in analytic memos, outlining the decision making relevant to analysis.[26] The codebook was used as a reference by the two analysts to maintain consistency, and was reviewed and discussed with two authors who are qualitative research experts (MS, AR) and one author who is a content expert (KH), twice throughout data analysis: first after analyzing two transcripts, and second after analyzing seven transcripts. No new codes were created after nine interview transcripts were analyzed, indicating adequate data saturation.[27] From the coding, analysists identified emergent themes and mapped each theme to one of the four levels of Kirkpatrick's model. Final results, which reflected the analysis of all transcripts, were then shared with the team of investigators for feedback.

RESULTS

Interviews with Participants

Of the 29 faculty members invited, 18 (62%) participated in the semi-structured telephone interviews (**Figure 1**); of these, four were males. At the time of the interview, four participants reported that they had left academia, and 14 were currently in academia; of these, eight were still teaching the *Rx for Change* curriculum, and the other six had transitioned to administrative roles.

Results Mapped to the Kirkpatrick's Four-Level Model

The analysts identified themes related to the experiences of participants with curricular implementation and the various outcomes that resulted from their training over a 12- to 14-year period. All participants implemented at least part, if not all, of the *Rx for Change* curriculum at their institutions, and four described the need to obtain approval from the curriculum committee prior to implementation. Eight themes emerged from the analysis of the 18 participants' interviews.

The first theme represented faculty perceptions of the *Rx for Change* curriculum as a teaching tool, mirroring Kirkpatrick's *"Level 1: Reaction".* The second theme was faculty perceived gain in confidence, and skills for teaching and clinical practice, which mirrored *"Level 2: Learning"*. Interviews revealed several facilitators and challenges associated with implementation of the *Rx for Change* curriculum, mirroring the *"required drivers"* of the Kirkpatrick's model. *"Level 3: Behavior",* is described by themes four and five from our study. Faculty reported that they had the freedom to incorporate the curricular content using different methods of delivery. The most commonly adopted teaching method was the active learning experiences used to engage students in translating concepts into clinical practice through role-playing and patient cases. Participants also used material from the *Rx for Change* program to assist patients at their clinical practice sites. *"Level 4: Results",* is described by themes six, seven, and eight. Teaching activities were perceived as helpful to foster students' confidence for counseling patients, which in turn was believed to positively influence the ability to assist patients with quitting. Another important benefit of training was the perceived expansion of the participants' network of faculty colleagues, which sometimes created opportunities for collaborating on tobacco-related research projects. The training also was perceived to provide helpful information about the tobacco epidemic and the different forms of tobacco. Such background knowledge was helpful in research projects.

The mapping of our findings onto Kirkpatrick's four levels for evaluating training programs is depicted in **Figure 2,**[18] and each of the eight themes is described in greater detail below.

Theme 1: Accessibility to Tools for Teaching

Thirteen participants perceived the *Rx for Change* curriculum to be advantageous in providing many tools and materials that could assist with teaching. Participants found it helpful to have access to comprehensive, high quality, evidence-based tobacco cessation teaching materials and described the *Rx for Change* website (http://rxforchange.ucsf.edu)[11] as a beneficial resource for continuously updated

information. These resources were also provided to pharmacy students for access after class and in their future clinical practice. A participant illustrated: *"All the slides were there, all the background information was there, the references were there, so if I didn't understand something I was able to find [the program's] source and go look it up and understand it that way. Those are really easy to use."* Many participants appreciated the cessation aids that were supplied by the training workshop, and these were used in laboratories for demonstrations. Another important advantage of this shared curriculum is that participants perceived it as a standardized curriculum that is *"already done"* for them. They described that it *"prevents everyone from having to recreate the wheel and doing their own"*. One participant explained, *"Why we create something when this is just the best that is there so for us…It is just so wonderful. I can't even imagine attempting to do it myself".* Another participant indicated that *"it was pretty exciting to have a strong, robust program that had really good, high quality teaching materials…that were up to date, and current".*

Theme 2: Increased Confidence and Skills

The training fostered faculty participants' confidence, and skills in teaching, as well as provided them with ways for practical application of tobacco content. Fourteen participants mentioned this theme. There were two subthemes:

(a) Increased confidence in teaching

The training helped participants teach students in the classroom, in laboratories, and teach students who are on rotations in clinical practice sites. As one participant explained, *"I feel like even though I've been doing it previously, I think the training gave me additional confidence in teaching [tobacco cessation content]"*. Participants described that the training helped enhance their confidence in teaching and made it *"much better and easier in many ways"*. One participant indicated that the tobacco cessation training workshop was helpful for transitioning to, and a *"nice segue way"* into teaching and presenting on the topic of marijuana.

(b) Provided a practical application

The training helped participants teach students in a practical way, so they could apply what they learned in the classroom to their clinical practice with real patients. Faculty used their acquired skills to develop new hypothetical patient cases to use in class, as well as discuss individual cases with students before counseling patients in clinical settings. One participant explained, *"[my students] are in the OTC [over the*

counter medication] aisle walking around helping patients, so it was pulling all of this together and making them use it on real patients".

Theme 3: Flexibility in Delivering the Curriculum

Participants appreciated the multifaceted aspect of the *Rx for Change* curriculum. It helped them implement the content in several different ways and enabled them to try new teaching methods and activities. They found it flexible, were able to use different components such as patient case scenarios and trigger videos, and were able to modify materials depending on the needs of the course and the students. Fourteen participants mentioned this category. There were three subthemes:

(a) Developed something new

Twelve participants described that they incorporated active learning methods into their classrooms or laboratory curriculum that covered the hands-on components they learned from the *Rx for Change* workshop. Additionally, several participants developed an intensive elective course on tobacco cessation; a participant indicated: *"in the last few years we also have had an elective developed…This is an entire elective based on smoking cessation".* One participant required students to counsel real patients in a community pharmacy: *"this particular lab [on Over-the-Counter drugs] is very complicated, so…half of the time they are in class, the other half they are in a community pharmacy in the over-the-counter section counseling patients"*. Another participant described requiring a tobacco-cessation certification program for all students, and another participant developed objective structured clinical examinations (OSCEs) that included smoking cessation to evaluate students.

(b) Accommodation to different learning styles

Participants appreciated that the curriculum could be taught by applying a variety of teaching methods to accommodate differences in students' learning capacities. Illustrated by a participant, *"I liked that it [Rx for Change] was multifaceted in the sense that it wasn't just all lectures…it [included] videos…hands-on workshops. There are different ways…in which people learn, and I think [the training program] facilitated that. I thought that was cool because students didn't get bored".*

(c) Selective use or modification of materials

Participants took advantage of the curriculum's flexibility and sometimes selected certain parts of the curriculum for implementation. This was sometimes done to overcome the limited curricular time dedicated to the topic. *"In the pulmonary class, because I have less time, we mostly focus on the drug*

products for smoking cessation and how to use those products", explained a participant. The following topics were given highest priority: pharmacotherapy products, patient counseling for tobacco cessation, the 5 A's framework (Ask, Advise, Assess, Assist, Arrange) for tobacco cessation interventions,[28] and case studies and patients' readiness to quit. They sometimes also modified or added certain slides, for example to include their local statistics in regards to tobacco prevalence in their patient population.

Theme 4: Factors Facilitating Implementation and Challenges Encountered by Faculty

Faculty participants perceived several facilitators to be important when implementing the *Rx for Change* curriculum. We also identified challenges encountered by faculty during curricular implementation and when integrating skills into practice, along with approaches faculty used to circumvent these challenges **(Tables 1 and 2).** There were four subthemes, three of which described facilitators (mentioned by thirteen participants), and one subtheme described challenges (mentioned by twelve participants).

(a) Implementation support team

Colleagues' support played a role in the success of implementation. Several faculty described that their colleagues in their institutions assisted them with the process of implementation, in particular those colleagues who attended the *Rx for Change* train-the-trainer workshop. They also described obtaining assistance from technology professionals, teaching assistants, and pharmacy residents. One participant explained, *"It wasn't just me, you know, in addition to the pharmacist who went, we had a couple other pharmacists who had been working on this project as well, working on tobacco cessation [projects]. So we had sort of a small, motivated group"*.

(b) Faculty champion with decision-making authority within course

Participants described that their position at their institutions helped facilitate integration of the tobacco content into their schools' curriculum. *"[I] just put it straight in, and it was really easy because I was in charge of the curriculum"*, a participant explained. Another important factor is the institutional flexibility and openness in making changes to the curriculum, as described by a participant:

> *"Pretty much the course coordinators at our institution have the flexibility to make alterations to their own courses without permission from the Curriculum Committee as long as it fits within whatever the course is structured to deliver, so there really wasn't anybody here to say 'yes' or 'no'. It was just like, 'yeah we're going to do this' and that's what we did". [Participant 1]*

Institutional flexibility, being in charge of the course, and being on the curriculum committee, were all factors that helped make the process of implementing the *Rx for Change* curriculum smooth and prompt.

(c) Lack of competing curricular priorities.

Findings from the data suggested that implementation is less challenging within new schools, when the school is undergoing curricular changes, or when the topic did not exist prior to implementation. As explained by a participant *"because it [Rx for Change curriculum] filled a gap, which is why it was not a challenge to get it approved by the curriculum committee"*. Participants indicated that it is less challenging when it does not involve removing or altering other topics in the curriculum. *"You don't get those obstacles [in implementing] because we're putting it into a new thing we're not taking away anything from anybody"*, a participant described.

(d) Challenges encountered

There were several challenges encountered during implementation of the *Rx for Change* content, the most common of which was not having sufficient time in the PharmD curriculum (**Table 1**). *"If I wanted to put more [tobacco content] in, or if I suggested that more go into our therapeutics curriculum…that would be a fight",* illustrated a participant.

Challenges encountered in translating the *Rx for Change* education to clinical practice were also described (**Table 2**). Those faculty members who practiced in free clinics, Veterans Affairs clinics, other outpatient clinics, or inpatient settings were satisfied about their impact on patients in assisting them with their tobacco dependence. However, one participant who practiced in a community pharmacy setting expressed a more limited role:

> *"Basically, what I do when I counsel people about smoking cessation, because of the limitations I have in the community [pharmacy] as far as time goes and priorities go is…I encourage them to call the quit lines. [I] say 'Here is [sic] some trained counselors, here is a toll-free number, call them, they will talk you through how to do all this to prepare yourself' and go from there. That's what I see my role is right now". [Participant 7]*

Theme 5: Enhancement in Treating Tobacco Users in Clinical Practice

Five participants described the impact of the *Rx for Change* train-the-trainer workshop on their clinical practice. They described the use of the *Rx for Change* website[11] and the specific tools provided, such as the pharmacologic product guide, cost comparison information, and symptoms of withdrawal handout for patients. Participants found that the curriculum reinforced the understanding of how patients can change their behavior, which was helpful in keeping patients on track in their cessation journey. A participant stated: *"Now since then I've had MTM [Medication Therapy Management] services and I've talked to patients about smoking cessation and where they were and if they had quit and where they were on that continuum of change. So, [the training] really has helped me for that".*

Theme 6: Students' Confidence and Cognizance of the Pharmacists' Role as a Public Health Advocate

Ten participants described the benefit of implementing Rx for Change and its impact on students' competency and comfort levels in talking with patients. The most beneficial component of the curriculum was the interactive and hands-on learning, which they perceived helped prepare students for clinical rotations and future clinical practice. A participant shared that *"[my] students say 'this was my favorite class. I learned so much. You made me get out of my comfort zone'. So [my] students see the value in [the tobacco cessation laboratory]".* They reported that students' confidence and skills for counseling tobacco users had improved, which, in their opinion, reflects positively on future patient care. According to faculty participants, students become empowered with information and resources that makes them comfortable talking with tobacco users and making recommendations to patients for tobacco cessation. A participant indicated that *"over time, we've received a lot of positive feedback about the preparation of our students".* Because many pharmaceutical aids for smoking cessation are available over the counter, participants believed that students were able to apply the information right away in the community pharmacy setting because many students worked at a community pharmacy while in pharmacy school. One faculty described training students one-on-one to be smoking cessation counselors in a smoke-free campus funded program, and this helped them feel comfortable talking with potential tobacco users. Participants were also pleased to see that students became more cognizant of their public health role, describing their awareness of their role in curbing the epidemic as being *"part of their fiber now".* Another was pleased to see an impact of tobacco cessation education on her students' knowledge:

"Our Dean did ask if our student leadership group would come together and write a letter and support the smoke-free campus…I think the students [who] worked on this letter were well-trained in the dangerous aspects of smoking and the roles of pharmacists in smoking cessation because within their letter you could tell that the training had an impact on them". [Participant 3]

Theme 7: Networking and Career Development Opportunities

Eight participants appreciated the opportunity to network and engage with other faculty attendees at the program, which helped them establish reputation as a tobacco cessation expert. One participant explained that she is now *"noticed as the smoking cessation person"*. The training also was perceived as a positive experience in enhancing career development, and described by a participant as *"a nice door opener"* and *"the feeling of everybody's doing kind of the same thing which can be exciting and to just know that you're a part of that group…on the forefront".* A participant shared that *"it was just incredible to be with the leaders around the country in smoking [cessation] at that time…[it] gave me a lot of credibility when I would speak at places about tobacco cessation…becoming a recognized leader".*

Them 8: Useful Background for Research

Seven participants described how the *Rx for Change* workshop provided a useful background for their research endeavors. *"I think it informed my broader understanding of tobacco in society. So…stuff about the different forms of tobacco, the epidemiology of tobacco use…it informed some of our surveys that we did campus wide to try to understand the students and tobacco use",* a participant explained. Another participant reported that he *"did a lot of stuff in cultural competency and health literacy, so my training and my knowledge in public health and…seeing how smoking [habits differs] in Hispanic communities and the [African American] communities…always helped me at least in terms of recognizing the cultural differences".*

DISCUSSION

The purpose of this study was to investigate faculty members' perceptions and experiences related to implementation of a shared tobacco cessation curriculum 12 to 14 years after participation in an *Rx for Change* train-the-trainer workshop. A qualitative approach was applied to answer the 'what' and 'how' question about the faculty experiences of curricular implementation.[29] Although a study was conducted

in 2016 to quantify the extent of *Rx for Change* curriculum utilization in pharmacy schools, the current qualitative study is a necessary contributor to the understanding of faculty perceptions and experiences with implementation over the years. In a chapter about the process of curricular changes, Lindberg emphasizes the importance of understanding faculty perceptions of curricular changes and ways in which it "affects them personally and professionally."[30] Venance et al. similarly stressed the importance of exploring faculty perspectives about implementing curricular changes, because they are the ones who are constantly engaged in creating and maintaining those changes within their institutions.[31] The literature, however, lacks studies that represent valuable faculty voices.[31]

In this study, we accepted Lau and Traulsen's challenge and adopted their recommendation to explicitly present how the selected conceptual framework was integrated throughout the study.[32] We selected Kirkpatrick's four levels of training evaluation framework to guide our study.[18] This framework closely paralleled the purpose of the study, which was to describe perceptions and experiences with implementing an educational curriculum after attending a workshop training. The framework was consistently applied throughout the study as an overall guide, in that it was applied when conceptualizing the interview items, it guided the analysis, and it was again applied in interpreting and reporting the study findings.

Results from this qualitative analysis characterize how faculty implemented the tobacco cessation curriculum in their respective pharmacy schools, ways by which they implemented the content in pharmacy school classrooms as well as in clinical practice, and ways by which they personally applied skills from their training to assist tobacco users in clinical settings. Other perceived benefits of the training included that faculty acquired background information for research related to tobacco and the opportunity to network with experts in the field. The study also elucidated challenges that faculty members encountered during curricular implementation, as well as challenges experienced when assisting tobacco users in clinical practice. Findings from this study will inform the development of a quantitative survey to be administered to all participants in the *Rx for Change* train-the-trainer workshop to evaluate the impact of the training on faculty members. Most faculty described the hands-on components of the training as being the most helpful, and they easily incorporated these components into their classrooms and laboratories. Active learning, which is receiving increased attention as it evolves in higher education, was described as an important method of teaching that "*involves students in doing things and thinking about the things they are doing" [pg. 2].*[33] However, active learning methods can be potentially challenging to implement, and therefore faculty might resist

adopting them.[34] Incorporating active learning into the curriculum was described by participants as a challenge with larger classroom sizes. Despite this, as a result of their training, faculty participants managed to incorporate several new active learning components.

In our study, other than cessation products (patches, gum, inhalers, etc.) needed for demonstrations in laboratories, participants indicated that monetary and equipment support was not a limiting factor for implementation. These findings are similar to previous research that described the minimal resources needed in implementing a tobacco cessation course in a medical school.[8] Consistent with previous findings, our study also demonstrated that the training had a perceived positive impact on faculty with assisting tobacco users in clinical practice.[35] However, similar to findings in the literature, community pharmacists' biggest challenge in being involved in health promotion and disease prevention was limited time, lack of financial reimbursement, and competing organizational priorities.[36,37]

Because this is a qualitative study, findings are not expected to be transferable to all pharmacy faculty. Contact information for faculty trainees who were still in academia was easier to locate, and therefore participants who enrolled in this study might not be representative of the broader group of 191 faculty members trained. To acknowledge and embrace potential biases that may impact the way we interpreted data,[38] the lead investigator of this study engaged in reflexivity by documenting personal assumptions and expectations before conducting the study, and an expert from a different discipline provided feedback.[39,40] The investigator who conducted the interviews was in a graduate training program, and this was her first experience conducting semi-structured interviewing. Additionally, there is a potential for recall bias because participants were asked about experiences and perceptions of events that occurred more than a decade ago. Finally, this study only focused on faculty, and not on their students. Although some participants described how students were able to assist tobacco users with quitting during their clinical practice, there were insufficient data to characterize these experiences fully. Despite these limitations, the study revealed key perceptions regarding over a decade worth of implementation experience that would be informative to future trainers and trainees. The long duration of time elapsed since the training enabled us to explore long-term impact of the training on implementation sustainability and long-term challenges and accomplishments. Future efforts should focus on understanding the impact of faculty training on students during pharmacy school and post-graduation as well as identifying key, overarching factors of success of the development and dissemination of shared curricula across schools for health professionals.

CONCLUSION

This study is novel in that it provided long-term follow-up to characterize pharmacy faculty members' perceptions of *Rx for Change* train-the-trainer workshops and experiences implementing a shared, comprehensive tobacco cessation curriculum. Faculty who received training reported several benefits of the program, including useful teaching tools and increased confidence for teaching tobacco content. Study participants also perceived that they themselves and their students acquired skills to treat patients with tobacco dependence in clinical practice. Results can be used by future trainers of educators to understand the experience of implementing a training program and inform faculty participants of potential long-term outcomes as a result of training. These findings highlight the importance of colleague support for curricular innovations as well as challenges associated with curricular implementation.

Table 1. Challenges encountered by participants when implementing Rx for Change smoking cessation curriculum in their respective institutions, and ways in which they were able to overcome those challenges.

Implementation Challenges	Example Quotations	Overcoming challenges	Example Quotations
Limited time in the curriculum	"I didn't have enough time in my sessions to incorporate all of the materials that were available [by Rx for Change program]" [5]	Pick and choose the highlights	"I ended up spending more time on the pharmacology and addiction pieces" [5]
		Share material with other faculty to teach in other courses	"I did share the information [from materials] with some of the [clinical faculty]" [10]
		Teach all the material in an elective course	"That's why I went for the elective. I could have more time to [teach] everything else" [6]
Faculty time constraints	"The major obstacle I actually had was time. How much time could I devote to getting [implementation] done? Because that was the rate-limiting step. Because I'm so busy doing other things" [8]	Get students' help	"I try to get my APPE students, or have students on rotation … help me to get the information I needed" [8]
Class size is large so it is difficult to incorporate active learning	"…the difficulties with the active learning with the larger class size and maybe lack of knowledge on my part about how to do that successfully" [2]	Teach lecture based	"We primarily taught it lecture based" [2]
		Collaborating with other faculty would have helped	"Or maybe just collaborating with the other individual to make the adaptive learning work better or to make it work" [2]
Cost of and access to cessation aids	"This is an ongoing struggle, I think that having access to some of the aids like the hands-on stuff, I mean we don't have access to that stuff routinely" [1]	Used old supply from Rx for Change training	"I still use some of the things but I think they're starting to get kind of old and worn down" [3]
		Incorporate cost into students' fee	"We just incorporated [the cost] into the student fee" [4]
		Add cost to budget	"We had to put them in a budget to buy some of the tools for the students like cessation aids" [15]

Small laboratory space	"The room that I have for the on-campus laboratory is not big enough to accommodate a fourth of the students at any given time" [9]	Use of smaller groups	"We like to do a lot of small groups" [9]
The need to revise the curriculum	"It is always a challenge when you revise curriculum" [10]	Add *Rx for Change* material into what already exist	"I was basically able to incorporate into what I already had" [10]
Students expecting a certification	"I think one obstacle I experienced is that the students…were expecting a certificate at the end to say 'I am trained in smoking cessation'" [6]	Faculty explained to students that the knowledge was still valuable	"Probably something along the lines of they just didn't have a certificate but the knowledge was still useful for them personally and for their patients. So even though they didn't get certificate, it's still valuable information" [6]
Changing curriculum is difficult, need to take time away from other parts	"Changing a curriculum is like trying to move a cemetery. And one of the big barriers [faculty] face is they'd have to change their curriculum, some people would have to give up some of their [topics], I mean you can't have people go to school for nine years" [16]	Determine priorities	"You start looking at what parts of the curriculum do we need to take some time away from" [16]

Numbers in brackets are participants' identifiers.

Table 2. Challenges encountered by participants when applying skills learned from the Rx for Change training to treat tobacco users in a practice setting, and ways in which they were able to overcome those challenges.

Clinical Practice Challenges	Example Quotations	Overcoming Challenges	Example Quotations
Pharmacists not receiving reimbursement for tobacco cessation counseling services, therefore, not a priority	"Right now the focus remaining is immunizations and so if you got any spare time you better be talking about immunization and there's no mention of talking about smoking cessation from the higher-ups because as far as I know there is no reimbursement" [7]	Pneumococcal vaccine is indicated for smokers, may be a way for managers to recognize a priority for tobacco	"The indication for pneumococcal vaccine in smokers is there now…And so that would be the only way to probably get the higher-ups [managers] to recognize that" [7]
Busy chain pharmacy setting prohibits counseling tobacco users	"There's some stores where you can [counsel tobacco users] but most of them you're [super busy]" [7]	Refer tobacco users to quit line	"they got a quit line where you had trained people, they can spend a lot of time…It's free and that's where I refer people to by default" [7]
Students' comfort and confidence counseling real patients	"We had students who this is their first time to actually talk with the patient and they were terrified by this" [9]	Use hypothetical patient cases in laboratory to prepare them	"When we're in lab it's hands-on so we are getting the things out of the boxes, touching, tasting, playing with whatever it is. And then they do case studies. In that they will role-play as well as we'll use standardized patients" [9]
It is complex to implement a new tobacco cessation program for students' experiential learning	"It's really hard [and] takes a lot of organization to implement a program within a pharmacy, takes a lot of effort to set it up and get it moving" [10]	Send rotation students to a site with an existing program already in place	"The only way they were able to [provide tobacco cessation services] in rotation is if they were assigned to a [clinical] practice site where they had a program already in place" [10]
Limited space in the tobacco cessation clinic	"We didn't have a lot of space [in the student health pharmacy] they had psychology graduate students [conducting] some of the counselling…a full time coordinator and…the regular pharmacy staff in this very small environment…we had a lot of people went through that [tobacco cessation] program" [14] No attempt to overcome this challenge		

Numbers in brackets are participants' identifiers.

Appendix. Interview guide used for the semi-structured telephone interviews with faculty members: main questions, follow-up questions and probes. Items were conceptualized to map to the selected conceptual framework for this study.

MAIN QUESTIONS	FOLLOW-UP QUESTIONS	PROBES
GENERAL INFORMATION / INTRODUCTION		
What was your position before participating in this training program? **	Please share with me your previous work history, education, etc. **	
Level 1: Reaction about the workshop training		
Tell me about your experience with the RxFC training you attended back in 2003/04/05.	What are some of the reasons you attended the program?	
What elements of the training program can be improved?	Could you suggest a few things that can be done?	Why do you think those suggestions are important?
The training you attended was live, if it was web-based, how would you feel about it if it was a web-based training?	Have you used a web-based smoking cessation training in the past? And how that went?	Do you feel the same way about web-based learning in regards to teaching your students? *
Level 2: Learning benefits from the workshop		
What aspects of the training program were most beneficial to you?	Please provide me with a specific example of a time in which you felt that additional training on smoking cessation would have been beneficial. **	
Level 3: Behavior during implementation		
Tell me about your experience implementing the RxFC curriculum into your school. Tell me about the process of implementing the curriculum in your school.	What made you take this decision of implementation? Who, if anyone, influenced your decision to make those changes? Did you present it to curriculum committee?	What was the reaction to your request? [If item rejected, ask:] What was your reaction when your request was rejected?
Tell me more about the changes or additions you made to the smoking cessation content in the curriculum.	What specific parts of the RxFC curriculum did you adopt? When did you make those changes?	(If yes) What kept you from adopting more material from the RxFC curriculum? (If not) What kept you from making any changes?
What resources, if any, have you used to	What obstacles did you experience during the	Can you give me an example of a time in

facilitate the implementation of curricular change in your school?	implementation process? What actions did you take, if any, to circumvent those obstacles?	which you wished that had some additional support?
During this process of implementation, what did you find most rewarding?		Please explain to me what you enjoyed about teaching RxFC. **
Are you still personally teaching Rx for Change? Why or why not?	Was it passed onto another person at the school?	
What role did other colleagues play in teaching RxFC? **		Please share a specific experience you have had with a colleague and how it impacted teaching RxFC. **
Do you use the RxFC website?	What do you use it for? **	In what ways did the website assist your teaching? **
How many hours of tobacco cessation material do your students currently receive (across the PharmD curriculum)?	How is that compared to before your training?	
Level 4: Results		
Tell me more about the ways in which this training impacted your career in terms of teaching.	In what ways did this training impact your students' competency? How did your students' skills and perspective change after their exposure to the material? ** In what areas did you notice improvement in students' knowledge or skill level? **	Please give me an example of a student discussion or student counseling session where their knowledge and skills were noticeably improved. ** What adjustments could be made to improve students' skills? **
Tell me more about the ways in which this training impacted your career in terms of clinical service.		Please give me an example of how this training affected your patients care. **
Tell me more about the ways in which this training impacted your career in terms of your relationship with colleagues.		Can you give me an example of some of your accomplishments that was a result of this colleague relationship?
Tell me more about the ways in which this training impacted your career in terms of your research.		

WRAP UP QUESTION		
Is there anything else you want to share about your experience with RxFC?	Do you have any additional suggestions?	

Abbreviation. RxFC: Rx for Change

* Item added after 8 interviews ** Items added after 11 interviews

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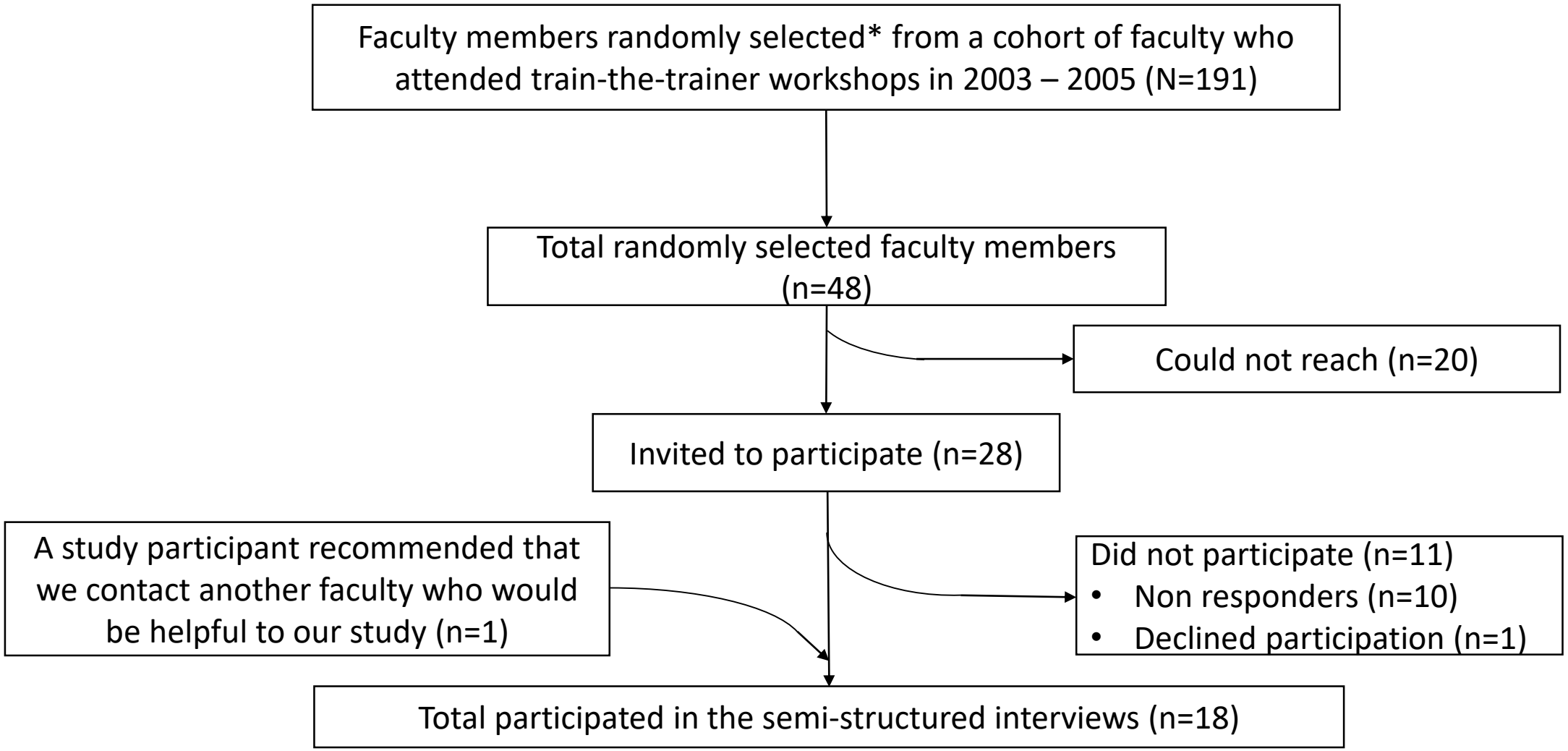
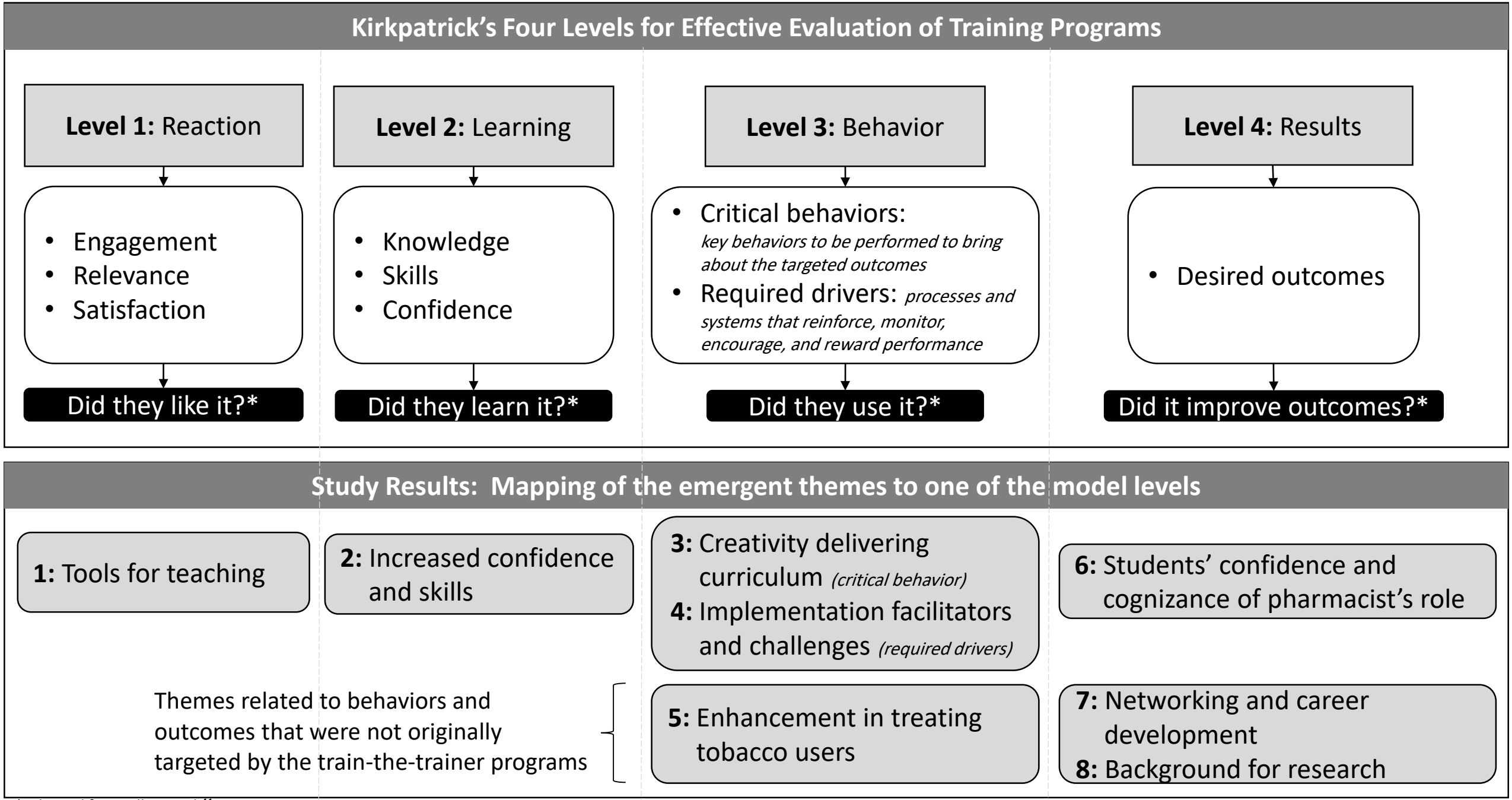
Figure 1. Results of recruitment: invited faculty, and number of interviews.



* Initial random selections were 20 faculty members, followed by 10, then 10, then 8. Recruitment was stopped when data was adequate.

Figure 2. Results: Mapping of emergent themes to Kirkpatrick's model that was selected to guide this study.



*Adopted from Allen et al.[41]